

Appl. No. 09/605,227
Amdt. Dated July 29, 2004
Reply to Office Action of May 3, 2004

Attorney Docket No. 81870.0009
Customer No.: 26021

REMARKS/ARGUMENTS:

Claim 19 is canceled without prejudice. Claims 7, 18, 22, and 24 are amended. Claims 1-12, 16-18, 20-24, and 26-29 are pending in the application. Reexamination and reconsideration of the application, as amended, are respectfully requested.

The present invention relates to an optical module and a connecting structure for an optical module which are used mainly in optical communication equipment or the like. (Applicant's specification, at p. 1, lines 1-4). The optical modules and connection structures of the present invention enable secure and easy mounting on an electric circuit board and are highly reliable. (Applicant's specification, at p. 4, lines 22-25).

CLAIM REJECTIONS UNDER 35 U.S.C. § 102:

Claims 18, 24, 26, and 27 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Beckwith (U.S. Patent No. 5,615,292). Applicant respectfully traverses this rejection. Claim 18, as amended, is as follows:

An optical module comprising:

a package casing provided with an electric terminal on a surface thereof, the package casing having a mount space;

a substrate having a planar main surface and a groove in the main surface of the substrate, bearing an optical element, an electrode drawn from the optical element, and one end of a slender light transmitter, the optical element and the one end of the slender light transmitter being fixedly attached on the substrate and optically coupled with each other, the substrate being placed in the mount space of the package casing;

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wherein the one end of the slender light transmitter is fixed in the groove,

wherein the light transmitter immediately adjacent to the optical element is fixed in the groove; and

a bonding member which connects the electric terminal of the package casing and the electrode pad on the substrate, the electric terminal being adapted to be electrically connected with an external circuit through a connector, wherein the substrate has a coupling portion coupled to a connector.

Claim 18, as amended, includes the following features of claim 1 that the Office acknowledges are not fairly taught or suggested by the prior art: an optical element, an electric connection terminal, a light transmitter all disposed on the substrate, wherein the light transmitter is fixed in the groove formed on the substrate and the electrical terminal is directly coupled to an external coupling connector. Therefore, claim 18 is patentable over Beckwith for at least the same reasons as claim 1. Withdrawal of this rejection is thus respectfully requested.

Claim 24, as amended, is as follows:

A combination comprising:

a connector including a receptacle, a module connection terminal, and a circuit board connection terminal electrically connected with the module connection terminal and connectable with an electric circuit board; and

an optical module including:

a package casing having a coupling portion to be received in the receptacle for the coupling of the connector and the optical module, and provided with an electric

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terminal on a surface of the coupling portion to be connected with the module connection terminal of the connector when the coupling portion is received in the receptacle, the package casing having a mount space;

a substrate having a planar main surface and a groove in the main surface of the substrate, bearing an optical element, an electrode drawn from the optical element, and one end of a slender light transmitter, the optical element and the one end of the slender light transmitter being fixedly attached on the substrate, and optically coupled with each other, the substrate being placed in the mount space of the package casing;

wherein the one end of the slender light transmitter is fixed in the groove,

wherein the light transmitter immediately adjacent to the optical element is fixed in the groove; and

a bonding member which connects the electric terminal of the package casing and the electrode pad on the substrate, wherein the substrate has a coupling portion coupled to a connector.

Claim 24 was similarly amended to include the features of claim 1 that the Office acknowledges are not fairly taught or suggested by the prior art. Therefore, claim 24 and its dependent claims 26 and 27 are patentable over Beckwith for at least the same reasons as claim 1. Withdrawal of this rejection is thus respectfully requested.

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CLAIM REJECTIONS UNDER 35 U.S.C. § 103:

Claims 19 and 22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Beckwith (U.S. Patent No. 5,615,292) in view of Carney (U.S. Patent No. 4,466,696). This rejection is moot with respect to claim 19 due to its cancellation. Applicant respectfully traverses this rejection as to claim 22.

Claim 22 depends from claim 18 and is therefore, patentable over Beckwith for the same reasons discussed above. Carney cannot remedy the defect of Beckwith. As the Office acknowledges there is nothing in the prior art that teaches or suggests all of the following: an optical element, an electric connection terminal, a light transmitter all disposed on the substrate, wherein the light transmitter is fixed in the groove formed on the substrate and the electrical terminal is directly coupled to an external coupling connector. Withdrawal of this rejection is thus respectfully requested.

Claim 20 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Beckwith (U.S. Patent No. 5,615,292) in view of Sjolinder et al. (U.S. Patent No. 5,715,338). Applicant respectfully traverses this rejection.

Claim 20 depends from claim 18 and is therefore, patentable over Beckwith for the same reasons discussed above. Sjolinder cannot remedy the defect of Beckwith and is not relied upon by the Office for such. Instead, the Office cites Sjolinder for teaching the use of a protector formed on the substrate that covers the optical element and the light transmitter. Withdrawal of this rejection is thus respectfully requested.

Claims 21, 28, and 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Beckwith (U.S. Patent No. 5,615,292) in view of Palmer (U.S. Patent No. 3,963,920). Applicant respectfully traverses this rejection.

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Claims 21, 28, and 29 depend from either claim 18 or 24 and are therefore, patentable over Beckwith for the same reasons discussed above. Palmer cannot remedy the defect of Beckwith and is not relied upon by the Office for such. Instead, the Office cites Palmer for teaching the use of a ceramic package casing or a ceramic connector body. Withdrawal of this rejection is thus respectfully requested.

Claim 23 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Beckwith (U.S. Patent No. 5,615,292) in view of Carney (U.S. Patent No. 4,466,696) as applied to claim 22 above, and further in view of Palmer (U.S. Patent No. 3,963,920). Applicant respectfully traverses this rejection.

Claim 23 depends from claim 18 and is therefore, patentable over Beckwith, Carney and Palmer for the same reasons discussed above. Withdrawal of this rejection is thus respectfully requested.

ALLOWABLE SUBJECT MATTER:

Claims 1-12, 16, and 17 are allowed.

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (213) 337-6700 to discuss the steps necessary for placing the application in condition for allowance.

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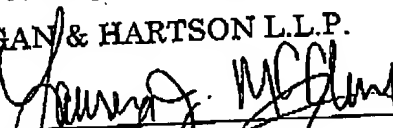
If there are any fees due in connection with the filing of this response, please
charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,

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Date: July 29, 2004

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